

PATENT COOPERATION TREATY
PCT
INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)



REC'D 07 JUL 2004

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Applicant's or agent's file reference P045361	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/JP 03/08786	International filing date (day/month/year) 10.07.2003	Priority date (day/month/year) 12.07.2002
International Patent Classification (IPC) or both national classification and IPC H01L21/00		
Applicant YAZAKI CORPORATION et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets, including this cover sheet.
- ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).
- These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:
- I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☐ Certain observations on the international application

Date of submission of the demand 09.02.2004	Date of completion of this report 06.07.2004
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Oloff, H Telephone No. +49 89 2399-7410 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/JP 03/08786

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-24 as originally filed

Claims, Numbers

1-4 as originally filed

Drawings, Sheets

1/3-3/3 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-4
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-4
Industrial applicability (IA)	Yes: Claims	1-4 (obviously)
	No: Claims	

2. Citations and explanations

see separate sheet

**INTERNATIONAL PRELIMINARY
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International application No. PCT/JP 03/08786

Reference is made to the following documents:

- D1: JP 2000350440 A
& the corresponding abstract in "Patent Abstracts of Japan"
- D2: JP 1016258 A
& the corresponding abstract in "Patent Abstracts of Japan"
- D3: JP 2002017036 A
& the corresponding abstract in "Patent Abstracts of Japan"

These documents were not cited in the international search report.

According to D3, see the corresponding abstract in "Patent Abstracts of Japan", the voltage across a PowerMOSFET 15 is sensed using two potential dividers R3/R4 and R1,R2 and compared with a reference value which reflects the temperature dependent ON-resistance of the PowerMOSFET in order to provide overcurrent protection by detecting a critical voltage across the PowerMOSFET. It seems plainly obvious that the conduction of the PowerMOSFET has to be cut off, should a critical voltage be detected.

The sensed voltage across the PowerMOSFET 15 equals the "ON resistance of the PowerMOSFET" multiplied by the "current through the PowerMOSFET" according to the well known Ohm's law.

The subject-matter of claims 1 and 3 seems therefore plainly obvious in view of D3.

Dependent claims 2 and 4 describe an obvious design choice for the circuit known from D3 in order to take account of variances during manufacture.

It is observed that

- D1, see the corresponding abstract in "Patent Abstracts of Japan", section: PROBLEM TO BE SOLVED; and
- D2, see the corresponding abstract in "Patent Abstracts of Japan", section: PURPOSE

use quite similar detection principle for overcurrent.